REMARKS

After entry of this amendment, claims 14-16 and 18-30 are pending, of which claims 19, 22 and 24-26 are withdrawn. Claims 15, 21 and 27 have been amended without prejudice or disclaimer and find support *inter alia* in the original claims. No new matter has been added.

Claim Objections

The Examiner objects to claim 15 for showing that the hydrogen is bonded to R6 instead of C in Formula (III). In response, claim 15 has been amended without prejudice or disclaimer to correct the position of the hydrogen in Formula (III). Support for the formula as corrected is found throughout the specification, for example, at page 4, lines 33-37.

The Examiner further suggests designating Formula (III) in claim 15 as Formula (I) since it is the only formula in the claim set. Applicants note that other formula are disclosed in the specification designating as Formula (Ia), (Ib), or (II), at page 5, for example. To avoid unnecessary confusion, the designation of Formula recited in claim 15 is maintained and has not been changed.

In view of the present amendment and the above remark, reconsideration and withdrawal of the objections is respectfully requested.

Claim Rejections – 35 USC § 112, Second Paragraph

The Examiner rejects claim 21 as being conflicting with claim 14 reasoning that claim 14 specifies that there is no addition of cyanide compounds in the aqueous medium but the nitriles added in claim 21, part (c), can be cyanide compounds. In response, the recitation of nitriles in claim 21 has been deleted without prejudice or disclaimer. In view of the present amendment, it is believed that the rejection is overcome.

The Examiner further rejects claim 21 for lack of antecedent basis for the stabilization of enzymes in claim 14. Applicants respectfully disagree with the Examiner's characterization of the claim. However, to expedite prosecution, claim 21 has been amended without prejudice or disclaimer to provide further clarification. The amended claim 21 specifies that the method of claim 14 is combined with a second method, which comprises adding at least one inorganic salt,

metal salts, or amides. The intended use of this second method is for stabilizing, preserving and/or storing enzymes. Thus, the recitation of "stabilizing, preserving and/or storing enzymes," as amended, is directed to the second method rather than the method of claim 14. Accordingly, there should be no antecedent basis issue as raised by the Examiner. Reconsideration and withdrawal of the rejection is respectfully requested.

The Examiner additionally rejects claims 21 and 27 as being confusing as to what is meant by adding ionic solutions in an aqueous environment which is outside the microorganism whereas the nitrilase activity in the form of an enzyme is apparently inside the microorganism. Applicants respectfully disagree. However, to expedite prosecution, claims 21 and 27 have been amended without prejudice or disclaimer to provide further clarification. In view of the above remarks and the present amendment, it is believed that the rejection is overcome. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim Rejections – 35 USC § 103

Claims 14-16, 20, 29 and 30 are rejected as being obvious over Chibata *et al.* (U.S. Pat. No. 3,898,128, hereinafter "Chibata I"), in view of Chibata *et al.* (U.S. Pat. No. 4,526,867, hereinafter "Chibata II") and Sigma Catalog.

The Examiner characterizes Chibata I as disclosing the conversion of L-aspartic acid to L-alanine by immobilizing an L-aspartic acid beta-decarboxylase-producing microorganism, such as *Alcaligenes faecalis*, with an acrylamide mixture. The Examiner acknowledges that Chibata I does not teach contacting cells with aldehyde to make an aqueous medium such that the aldehyde effects subsequent immobilization, or storing and/or preserving the microorganism in aldehyde, or the nitrilase enzyme activity is preserved for a period of up to 37 days at a temperature of 0-22°C, but relies on Chibata II for such teaching. The Examiner cites to Sigma Catalog as an evidence document.

The Examiner characterizes Chibata II as disclosing a method for immobilizing microbial cells comprising cultivating cells and treating the culture broth with glutaraldehyde. The Examiner alleges that the method of Chibata II practices the step recited in claim 14, i.e. contacting cells with an aldehyde at a concentration that overlaps with the claimed concentration. The Examiner further alleges that the limitation of an aqueous medium recited in claim 14 is also

met by the initial contacting step of the cultivated cells with glutaraldehyde in Chibata II because the cells are in a culture broth and glutaraldehyde is supplied as an aqueous solution. The Examiner additionally asserts that, since the cells are contacted with glutaraldehyde, they are naturally stored and preserved by the glutaraldehyde.

Based on the above characterization of the cited references, the Examiner contends that it would have been obvious to immobilize the *A. faecalis* cells of Chibata I by the method of Chibata II because Chibata II teaches that any microorganism can be used in the disclosed method and that microbes having L-aspartate beta-decarboxylase activity are preferred. The Examiner further contends, by carrying out the method of Chibata II with the *A. faecalis* cells of Chibata I, such *A. faecalis* cells would be preserved and stored because the method of Chibata II has the same steps as claimed. Applicants respectfully disagree with the Examiner's characterization of Chibata II and the finding of obviousness.

Chibata II discloses a process for preparing an immobilized microorganism. The process of Chibata II comprises (1) cultivating a microorganism in a culture broth, (2) treating the broth with glutaraldehyde when cultivation is completed, (3) collecting microbial cells from the broth, (4) admixing the microbial cells with an aqueous solution of a polysaccharide having 10 w/w % or more of sulfate moiety in the molecule thereof, and (5) gelling the polysaccharide in the resulting mixture to entrap the microbial cells within the gel matrix of the polysaccharide. Chibata II, Col. 1, ll. 50-60. As further detailed in Col. 2, ll. 31-44, the treatment with glutaraldehyde is conducted after the completion of cultivation by admixing glutaraldehyde with the culture broth for a period of time from 1 minute to 24 hours. After treatment with glutaraldehyde, microbial cells are collected, for example, by centrifugation of the culture broth, followed by additional steps for immobilizing the microbial cells. Thus, it is apparent that the presence of glutaraldehyde in the alleged aqueous medium of Chibata II is only for a short period of time prior to immobilization of the microbial cells. Furthermore, because glutaraldehyde is removed prior to the additional steps for immobilization, it is apparent that the immobilized microbial cells are stored without the presence of glutaraldehyde. This series of steps does not teach or suggest "preserving" or "storing."

In contrast, the present application directs to a method by preserving and/or storing the

microorganism in an aqueous medium comprising a defined amount of aldehyde. Because the claimed method requires the presence of aldehyde in the aqueous medium for preserving and/or storing the microorganism, the disclosure of Chibata II, even combined with Chibata I, does not render the claimed method obvious.[1]

Moreover, it is further noted that the method disclosed in Chibata II is for preparing an immobilized microorganism having higher stability and higher enzymatic activity for a longer period of time in a continuous enzymatic reaction. The treatment of glutaraldehyde is for stabilizing the enzymatic activity of the immobilized microorganism during the continuous enzymatic reaction. In contrast, the method according to the present application preserves and/or stores a microorganism in an aqueous medium comprising aldehyde prior to the enzymatic reaction. Unlike Chibata II, the claimed method is not directed to the optimization of an enzymatic reaction. Nothing in Chibata II, even combined with Chibata I, teaches or suggests the use of an aqueous medium comprising aldehyde (or glutaraldehyde) for preserving and/or storing a microorganism prior to the enzymatic reaction. Accordingly, the cited references, alone or in combination, do not render the claimed method obvious.

Additionally, it is respectfully submitted that Chibata II teaches away from including aldehyde in an aqueous medium for the purpose of preserving and/or storing a microorganism. As discussed above, the method taught in Chibata II requires that the glutaraldehyde is removed after the brief treatment and prior to the additional steps for immobilization. Thus, even combined with Chibata I, the combined teaching of the cited references would motivate one skilled in the art to remove glutaraldehyde from the *A. faecalis* cells prior to the immobilization. As such, the immobilized *A. faecalis* cells would not have been preserved or stored in an aqueous medium comprising aldehyde as required by the claims. For this additional reason, the cited references, alone or in combination, do not render the claimed method obvious.[2]

---

[1] To support a *prima facie* conclusion of obviousness, the prior art must disclose or suggest all the limitations of the claimed invention. See *In re Lowry*, 32 F.3d 1579, 1582, 32 USPQ2d 1031, 1034 (Fed. Cir. 1994); see also *Abbott Labs. v. Sandoz, Inc.*, 544 F.3d 1341 (Fed. Cir. 2008) ("[t]he KSR opinion . . . did not mention or affect the requirement that ***each and every claim limitation be found present in the combination of the prior art references before the analysis proceeds***.") (emphasis added).

[2] It is well established that under 35 U.S.C. § 103 the Examiner must consider the reference in its entirety, *i.e.* as a whole, including portions that teach away from the claimed invention. *W.L. Gore & Associates, Inc. v.*

The Examiner further contends that preserving the nitrilase activity for a period up to 37 days would have naturally followed from using the *A. faecalis* cells of Chibata I in the method of Chibata II. Applicants respectfully disagree.

It is noted initially that, as discussed above, the combined teaching of the cited references does not teach or suggest preserving and/or storing a microorganism in an aqueous medium comprising aldehyde. Moreover, a skilled artisan would not have had a reasonable expectation of preserving the nitrilase activity for a period up to 37 days by preserving and/or storing the microorganism having the nitrilase activity in an aqueous medium comprising aldehyde as taught in the present application. For this additional reason, the cited references, alone or in combination, do not render the claimed method obvious.[3]

The Examiner further rejects claim 28 as being obvious over Chibata I, in view of Chibata II and Sigma Catalog, and further in view of Choi *et al.* (U.S. Pat. No. 6,649,382, hereinafter "Choi"). Applicants respectfully disagree.

As discussed above, the combination of Chibata I and Chibata II does not render the main claim obvious. Since claim 28 recites all the limitations of the main claim, the combination of Chibata I and Chibata II, further in view of Sigma Catalog and Choi, would not render claim 28 obvious for essentially the same reasons as detailed above. Accordingly reconsideration and

---

Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); see also *KSR*, 127 S. Ct. at 1740; MPEP § 2141.03 (VI). The Examiner cannot selectively pick and choose from the disclosed parameters without proper motivation as to a particular selection. The mere fact that a reference may be modified to reflect features of the claimed invention does not make the modification, and hence the claimed invention, obvious unless the prior art suggested the desirability of such modification. *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430 (Fed. Cir. 1990); *In re Fritch*, 23 USPQ2d 1780 (Fed. Cir. 1992). "[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. . . it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements ***in the way the claimed new invention does***." See *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) (emphasis added). Thus, it is impermissible to simply engage in a hindsight reconstruction of the claimed invention where the reference itself provides no teaching as to why the applicant's combination would have been obvious. *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991).

[3] It is well established that "obviousness cannot be predicated on what is unknown." *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993). As found by the court in *In re Antonie*, which reversed the Board's finding of obviousness, it is the invention as a whole, and not some part of it, which must be obvious under 35 U.S.C. § 103. *In re Antonie*, 559 F.2d 618, 619-620 (CCPA 1977); see also MPEP § 2141.02 V. Furthermore, the court in *In re Antonie* found that the prior art did not reveal the property which appellant discovered and, therefore, there was no basis to find obviousness. *Id.* See also *In re Naylor*, 369 F.2d 765, 768 (CCPA 1966) (reversing the Board's finding of obviousness and holding that one skilled in the art ***must have recognized*** the claimed property would have been the inevitable result of obvious modification.).

withdrawal of the rejections is respectfully requested.

CONCLUSION

In view of the above remarks and further in view of the above amendments, Applicants respectfully request withdrawal of the rejections and allowance of the claims. If any outstanding issues remain, the Examiner is invited to telephone the undersigned at the number given below.

Applicants reserve all rights to pursue the non-elected claims and subject matter in one or more divisional applications, if necessary.

This response is filed within the three-month period for response from the mailing of the Office Communication. No fee is believed due. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 12810-00105-US from which the undersigned is authorized to draw.

Respectfully submitted,

By /s/ Hui-Ju Wu
Hui-Ju Wu, Ph.D.
Registration No.: 57,209
CONNOLLY BOVE LODGE & HUTZ LLP
1007 North Orange Street
P. O. Box 2207
Wilmington, Delaware 19899-2207
(302) 658-9141
(302) 658-5614 (Fax)
Attorney for Applicants

#717451